Title: Direct Loading of Semistructured Data
Inventor(s): Namit Jain, et al.
Docket No. 50277-2235
Express Mail No: EV322192481US
Date Filed: August 25, 2003
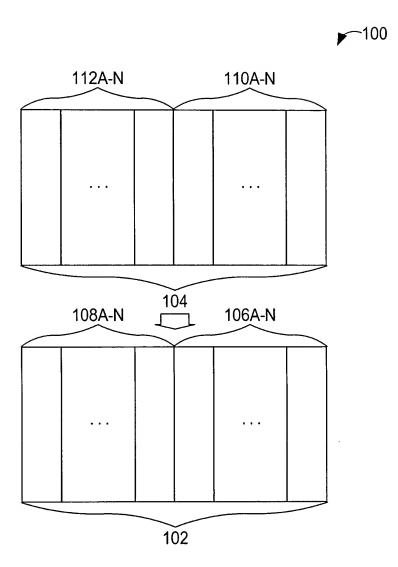Sheet 1 of 9

FIG. 1

200

A	(W,X,Y,Z)	C	D
202A	202B	202C	202D

FIG. 2

300

A	•	C	D
302A	302B	302C	302D

304

306

(W,X,Y,Z)

FIG. 3

400

A	•	C	D
402A	402B	402C	402D

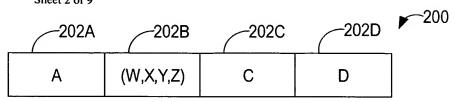404

W	406A
X	406B
Y	406C
Z	406D

FIG. 4A

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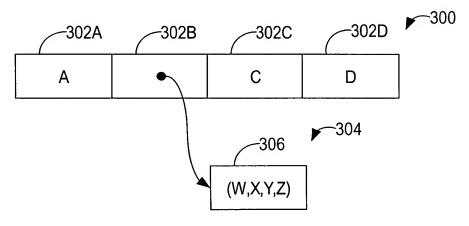Express Mail No: EV322192481US
Date Filed: August 25, 2003
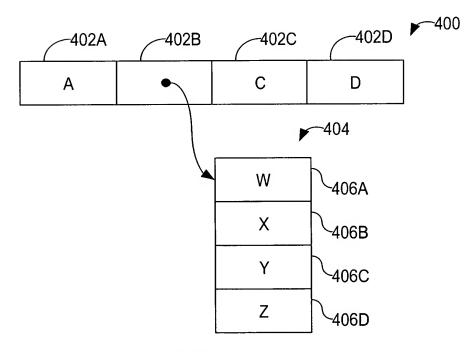Sheet 3 of 9

FIG. 4B

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500

514
CLIENT APPLICATION
ADDRESS SPACE

516A-N
ARRAYS

518
SEMISTRUCTURED
DATA

508A
TYPE
IMPLEMENTOR

510AA-AN
ROUTINES

502
CLIENT
APPLICATION

512
DISPATCH
TABLE

508N
TYPE
IMPLEMENTOR

510NA-NN
ROUTINES

504
DATABASE
SERVER

506
DATABASE

FIG. 5

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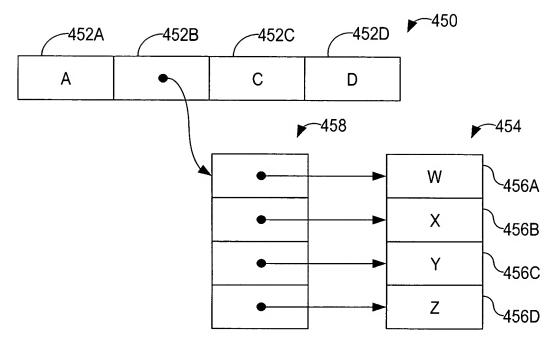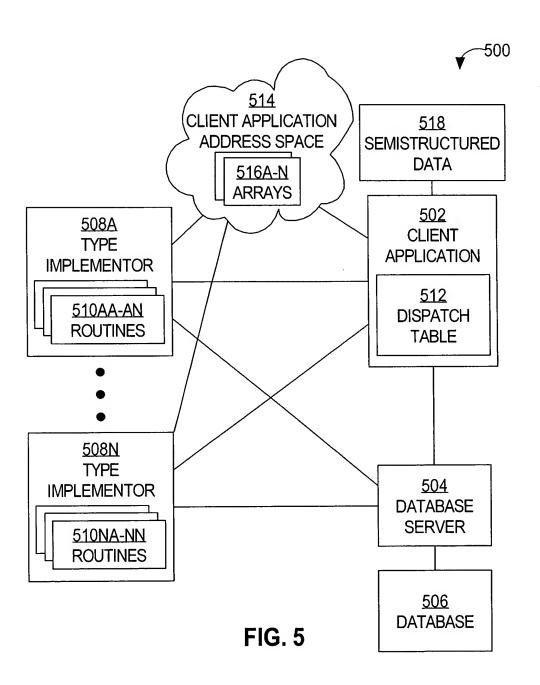Express Mail No: EV322192481US
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FIG. 6A

↙—600

602
FIRST TYPE IMPLEMENTOR REGISTERS, WITH A CLIENT APPLICATION, FIRST
ROUTINES THAT ARE IMPLEMENTED BY THE FIRST TYPE IMPLEMENTOR

604
CLIENT APPLICATION ADDS, TO A DISPATCH TABLE, AN ENTRY THAT INDICATES
AN ASSOCIATION BETWEEN THE FIRST ROUTINES AND A PARENT TYPE THAT
THE FIRST TYPE IMPLEMENTOR IMPLEMENTS

606
SECOND TYPE IMPLEMENTOR REGISTERS, WITH THE CLIENT APPLICATION,
SECOND ROUTINES THAT ARE IMPLEMENTED BY THE SECOND TYPE
IMPLEMENTOR

608
CLIENT APPLICATION ADDS, TO THE DISPATCH TABLE, AN ENTRY THAT
INDICATES AN ASSOCIATION BETWEEN THE SECOND ROUTINES AND A CHILD
TYPE THAT THE SECOND TYPE IMPLEMENTOR IMPLEMENTS

TO
610

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FIG. 6B

(FROM 608)

↗ 600

↓

610
CLIENT APPLICATION RECEIVES SEMISTRUCTURED DATA THAT SPECIFIES INSTANCES OF THE PARENT TYPE

↓

612
CLIENT APPLICATION DETERMINES, FROM THE DISPATCH TABLE, WHICH ROUTINES ARE ASSOCIATED WITH THE PARENT TYPE

↓

614
CLIENT INVOKES ONE OR MORE OF THE FIRST ROUTINES, WHICH ARE ASSOCIATED WITH THE PARENT TYPE

↓

616
ONE OR MORE OF THE FIRST ROUTINES CREATES A PARENT ARRAY THAT COMPRISES (1) A SEPARATE COLUMN FOR EACH ATTRIBUTE OF THE PARENT TYPE AND (2) COLUMNS THAT CORRESPOND TO HIDDEN COLUMNS OF A DATABASE TABLE THAT IS TO STORE INSTANCES OF THE PARENT TYPE

↓

(TO 622)

FIG. 6C

(FROM 616)

←600

622
ONE OR MORE OF THE FIRST ROUTINES INVOKES ONE OR MORE OF THE SECOND ROUTINES, WHICH ARE ASSOCIATED WITH THE CHILD TYPE

624
ONE OR MORE OF THE SECOND ROUTINES CREATES A CHILD ARRAY THAT COMPRISES (1) A SEPARATE COLUMN FOR EACH ATTRIBUTE OF THE CHILD TYPE AND (2) COLUMNS THAT CORRESPOND TO HIDDEN COLUMNS OF A DATABASE TABLE THAT IS TO STORE INSTANCES OF THE CHILD TYPE
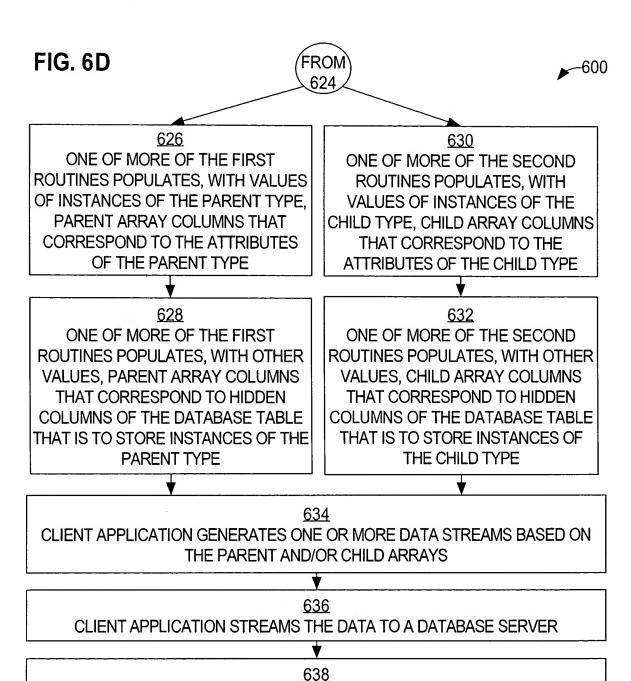
(TO 626)

FIG. 6D

(FROM 624)

←600

626 ONE OF MORE OF THE FIRST ROUTINES POPULATES, WITH VALUES OF INSTANCES OF THE PARENT TYPE, PARENT ARRAY COLUMNS THAT CORRESPOND TO THE ATTRIBUTES OF THE PARENT TYPE	630 ONE OF MORE OF THE SECOND ROUTINES POPULATES, WITH VALUES OF INSTANCES OF THE CHILD TYPE, CHILD ARRAY COLUMNS THAT CORRESPOND TO THE ATTRIBUTES OF THE CHILD TYPE
628 ONE OF MORE OF THE FIRST ROUTINES POPULATES, WITH OTHER VALUES, PARENT ARRAY COLUMNS THAT CORRESPOND TO HIDDEN COLUMNS OF THE DATABASE TABLE THAT IS TO STORE INSTANCES OF THE PARENT TYPE	632 ONE OF MORE OF THE SECOND ROUTINES POPULATES, WITH OTHER VALUES, CHILD ARRAY COLUMNS THAT CORRESPOND TO HIDDEN COLUMNS OF THE DATABASE TABLE THAT IS TO STORE INSTANCES OF THE CHILD TYPE

634
CLIENT APPLICATION GENERATES ONE OR MORE DATA STREAMS BASED ON THE PARENT AND/OR CHILD ARRAYS

636
CLIENT APPLICATION STREAMS THE DATA TO A DATABASE SERVER

638
DATABASE SERVER WRITES THE DATA DIRECTLY INTO THE DATABASE

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FIG. 7